Before the
Federal Communications Commission
Washington, DC

In the matter of	)	MM document 99-25
MITRE report on 3rd adjacent	)	
measurements for LPFM	)	Public Notice DA 03-2277

Comments of JT Communications

1- JT Communications of Ocala, Florida is a manufacturer of equipment for the FM broadcast service.
2- JT Communications was granted an experimental license a few years ago to conduct antenna measurements for the FM broadcast band.
3- JT Communications had the opportunity to conduct tests beyond those required for antenna measurements, including measurements from co and adjacent channel interference on various frequencies on the FM broadcast band. A consolidated copy of this report is attached as **exhibit "A"**.
4- The results obtained by measurements conducted by JT Communications are very similar to the results conducted by Mitre.
5- Based on the similar results from separate tests, it is the opinion of JT Communications that **Congress should eliminate 3rd channel adjacent protection requirements in regards to LPFM station channel assignments**.

Submitted by:

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EXHIBIT "A"
Consolidated Interference report of JT Communications

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1- INTRODUCTION

Congress has required that the FCC modify its' rules to require LPFM stations to protect the 3rd adjacent channel when applying for a construction permit. This report will highlight measurements conducted by JT Communications, and show that the 3rd adjacent channel does not cause significant interference from the power level generated by LPFM stations.

2- NAB REPORT

The NAB released a report in August 1999, purporting to indicate that …"millions of Americans would suffer new interference to their existing radio service…", but *failed to fully report the methods utilized* for their 'measurements'. Further, the NAB utilized an outside agency (Carl T. Jones Corporation) to make 'measurements' utilizing "…28 FM broadcast receivers to determine the level of interfering signal necessary to cause the S/N ratio of the audio in the desired station to deteriorate to the level specified by Moffet, Larson & Johnson)(1)…". Additionally, the NAB report states that "…in order for a second adjacent interfering station to cause interference to a desired station when the received signal level of the desired station is –45 dBm (approximately equivalent to the received signal level at the 70 dBu "city grade" contour…", but does not indicate how this interference measurement was arrived at. They repeat the same claim for 3rd adjacent channel interference also. Then they created maps of these inconclusive numbers, and attempted to show that 'interference' overlaps would occur in a convincingly fashion. Apparently, convincingly enough to elude Congress into believing these unsubstantiated results. Additionally, the NAB released an auditory reproduction of what claims to be 'interference' between 2 co-channel stations. An analysis of this recording was listened to by several engineers with over 50 years of combined experience in radio broadcast experience (2), indicated that *the recording did NOT properly indicate such interference between 2 stations.* Based on an unsubstantiated report, and a falsified recording, the NAB's character was compromised.

3- TEST

JT Communications conducted measurements utilizing actual on-air measurements. Several control factors were considered, and noted in this report. The primary concern was third-channel interference; therefore any measurements are relative to 3rd adjacent results only. In each case, a control measurement was also taken as to determine if any interference would occur from FPFM stations to the test transmission. In all cases, this measurement was significantly greater than the test transmission interference.

Control factors:

In order to properly perform the tests, control factors were already pre-determined, based on limitations to the FCC grant of authorization. The purpose of the license was to conduct antenna measurements for manufacture. During antenna testing, additional measurements utilizing conventional FM broadcast receivers were utilized to determine the amount of interference that would occur between the test signal, and existing full power FM broadcast stations (FPFM). Without compromising the license or applicable FCC rules, the following control conditions were maintained:

1- The Effective Radiated Power (ERP) was limited to 10 watts.
2- All measurements and tests were conducted so that no interference occurred to any existing licensed FM stations.

Figure 1- List of stations utilized- these are the stations that were included in the measurements (3).

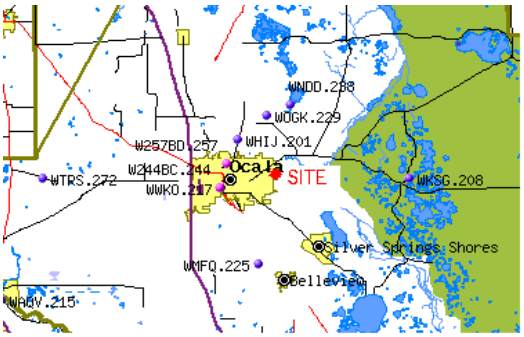
Callsign	Chan/Freq	Class	City	Distance from site
WHIJ	201 88.1 MHz	A FM LIC	OCALA	6.87 km
WMFQ	225 92.9 MHz	C2 FM LIC	OCALA	12.62 km
WOGK	229 93.7 MHz	C FM LIC	OCALA	8.49 km
WNDD	238 95.5 MHz	A FM LIC	SILVER SPRINGS	10.31 km
W244BC	244 96.7 MHz	D FX LIC	OCALA	7.13 km
WKTK	253 98.5 MHz	C1 FM LIC	CRYSTAL RIVER	48.60 km
W257BD	257 99.3 MHz	D FX LIC	OCALA	6.17 km
WTRS	272 102.3 MHz	C2 FM LIC	DUNNELLON	31.15 km

Equipment- each item number is referenced in the test procedure below:

1- JT Communications Exciter, model FMT-30.
2- JT Communications Exciter, model FMP-20
3- Auto radio receiver, Delco factory installed.
4- Auto radio receiver, 1988 Nissan, factory installed.
5- Clock radio receiver, Phillips.
6- Desktop radio, Potomac.
7- Portable radio, Panasonic RF-2200
8- Field Strength meter, Wavetek model SAM II
9- Reference receive dipole antenna for #8 above.
10- Spectrum analyzer. Hewlett-Packard 8555A/8552B
11- Oscilloscope- Tektronix 454
12- FM tuner- Pontus FM141T with modified 150 kHz I.F. filters (4.
13- Audio amplifier and speakers when internal amplification was not available.
14- GPS receiver

FIGURE 2- MAP

This map shows the locations of the stations listed from figure 1.



Transmit site is indicated in red. Locations of FPFM transmit sites And other FM sites are indicated by Corresponding identifiers. This map is The primary area for testing.

Scope of the testing:

The purpose of the testing was to determine what effects would occur when a 10 watt frequency modulated signal was set to transmit on the third adjacent channel of a FPFM station, and how these effects would deteriorate against each of the FPFM and test signals.

Method of testing:

MOBILE TESTING:
To generate a 10 watt signal at an antenna height of 30 meters H.A.A.T. on each side of the third adjacent channel of the listed FPFM stations, set receivers at given test locations, and determine what effects the 10 watt test signal causes to the FPFM station. Subject would tune test receiver to selected station, and move location toward the test transmit site. As soon as any perceived noise increase, or any other anomaly would occur, subject would log geographic coordinates, and type of interference noted. As subject moved closer to transmit site, subject would continue to log coordinates (and interference noted), until FPFM station was no longer considered listenable.

FIXED TESTING:
Similar to mobile testing, however, fixed distances from transmit site were indicated by GPS coordinates, and spectrum analysis was observed by comparing adjacent signal to interfering signal.

Test locations:
Test locations are indicated by subject. Each subject utilized different locations based on amount of interference created by test transmission to FPFM station.

Variables to be considered:

1- All references to “any perceived noise increase, or any other anomaly” are subjective in nature, and must be considered when determining how each subject arrived at the determination of “any perceived noise increase, or any other anomaly”.
2- “Any perceived noise increase, or any other anomaly” that is referred to is dependent upon the design and electrical characteristics of each receiver under test.
3- “Considered listenable” as indicated above is subjective in nature. In all cases though, at the first instance of any interference from the test transmission would start logging process.
4- Fixed measurements were confirmed by spectral analysis (5).

SYNOPSYS OF TEST RESULTS- Control group

Notes:
1- For purposes of consolidation, only mobile tests are indicated here, and single subject's evaluations listed (6).
2- In all cases, Test Transmitted content consisted of highly processed music and pink noise to maximum deviation of +/- 75kHz.
3- As a control, a measurement was taken from the FPFM station interference to the test transmission.
4- TT indicates Test Transmission, FPFM indicates Full Power FM station.

Test 1:
Tested using Equipment item (3)
FPFM station evaluated: WHIJ (88.1) 1.25kW HAAT 394'
Transmitter set to 88.7 mHz.
First sign of interference from TT- unmeasurable (less than 150' from TT antenna).
Calculated field strength of FPFM station is 4.01 mV/M
First sign of interference from FPFM station to TT is 0.1kM from TT.

Test 2:
Tested using Equipment item (3)
FPFM station evaluated: WMFQ (92.9) 50kW HAAT 475'
Transmitter set to 92.3 mHz- upper 3rd adj not tested due to close proximity to WOGK.
First sign of interference from TT- unmeasurable (less than 150' from TT antenna).
Calculated field strength of FPFM station is 8.62 mV/M
First sign of interference from FPFM station to TT is .31 kM from TT.

Test 3:
Tested using Equipment item (3)
FPFM station evaluated: W244BC (96.7). 10W HAAT 302'
Transmitter set to 96.1 mHz - upper 3rd adj not tested due to close proximity to WSKY
First sign of interference from TT- distance .21 kM from test transmission.
Calculated field strength of FPFM station is .65 mV/M
First sign of interference from FPFM station to TT is .11 kM from TT.

Test 4:
Tested using Equipment item (4)
FPFM station evaluated: WNDD (95.5). 6kW HAAT 328'
Transmitter set to 96.1 mHz.
First sign of interference from TT- unmeasurable (less than 150' from TT antenna).
Calculated field strength of FPFM station is 10.175 mV/M
First sign of interference from FPFM station to TT is .21 kM from TT.

Test 5:
Tested using Equipment item (4)
FPFM station evaluated: W257BD (99.3). .06kW HAAT 187'
Transmitter set to 98.7 mHz.
First sign of interference from TT- distance .1 kM from test transmission.
Calculated field strength of FPFM station is 1.37 mV/M
First sign of interference from FPFM station to TT is .4 kM from TT.

CONCLUSIONS:

Even though only 5 tests are indicated in the consolidated report, over 30 measurements are on file that indicate similar results to those indicated in the control group.

1- The test transmission signal had *no sign of interference on the third adjacent channel* except at distances ***less than .15 kM from the test transmission.***
2- In some cases, the interference was unmeasurable.
3- The interference from FPFM stations to the test transmission was significantly *magnitudes greater* than any interference from the test transmissions.

Based on the data measured, it can be concluded that 3rd adjacent interference from a ten-(10) watt signal has almost negligible effect on FPFM stations, therefore should not be necessary to protect this contour.

Footnotes:

(1) The NAB report fails to indicate what they define as 'interference', or how it is determined.
(2) A separate report in the form of an affidavit can be supplied indicating that the NAB recording was falsified, due to the noise generated, and sounded like someone with the ability to add 2 audio sources together, and introduce pink noise to the equation, and did NOT realistically prove that interference between 2 co-channel stations occurs in this method.
(3) Although there are many additional stations that could have been included in the measurements, the listed stations were the highest in signal strength.
(4) I.F. filters were changed from +/- 230 kHz BW to +/- 150 kHz BW.
(5) Although spectrum measurements were taken, they are not included in this report.
(6) Note that other subjects evaluating tests indicated comparable results with less than .03% margin of difference in measurements of a subjective nature.